

IN THE DRAWINGS:

The attached sheet of drawings includes changes to Figure 1. This sheet replaces the original sheet showing Figure 1.

Attachment: Replacement Sheet.

REMARKS

As discussed in further detail below, Figure 1 has been amended to correct an informality. Paragraph [0004A] has been added to correct an informality in the specification. Support for paragraph [0004A] may be found throughout the specification, as well as in the priority document, which was incorporated by reference in its entirety in paragraph [0001]. Claims 1, 6, 7, 10, 12, 15, and 17 have been amended to clarify the language and/or correct informalities contained therein. No new matter has been added. Claims 5, 14, and 16 have been canceled without disclaimer of the subject matter contained therein or prejudice to Applicant's right to file any continuation applications directed thereto. Upon entry of this Amendment, claims 1-4, 6-13, 15, and 17 remain pending.

In the Office Action dated March 27, 2007, the drawings were objected to as failing to comply with 37 C.F.R. §1.84(p)(5), because Figure 1 contained reference character 'BP.' Figure 1 has been amended to remove reference character 'BP.' Accordingly, Applicant respectfully requests that the objection to the drawings be withdrawn.

In the Office Action, the drawings were objected to under 37 C.F.R. §1.83(a) as failing to show every feature of the invention specified in the claims. Specifically, the third, grounded conductor of claim 5 and the amplifier circuit of claim 6 were not shown in the drawings. Claim 5 has been canceled and claim 6 has been amended. As such, Applicant respectfully submits that the drawings fully comply with 37 C.F.R. §1.83(a), and respectfully requests that the objection to the drawings be withdrawn.

In the Office Action, the disclosure was objected to because of informalities contained in paragraph [0005] of the specification. As discussed above, the specification has been amended to include paragraph [0004A] immediately proceeding paragraph [0005], thereby eliminating the informality. Accordingly, Applicant respectfully requests that the objection to the disclosure be withdrawn.

In the Office Action, claim 12 was objected to for containing an informality. As discussed above, claim 12 has been amended to correct the informality. Accordingly, Applicant respectfully requests that the objection to claim 12 be withdrawn.

In the Office Action, claim 14 was rejected under 35 U.S.C. §101 because the claimed invention is allegedly directed to non-statutory subject matter. Claim 14 has been canceled, thereby mooted the rejection.

In the Office Action, claim 16 was rejected under 35 U.S.C. §102(b) as being anticipated by Burkhart et al. (U.S. Patent No. 6,075,375). Claim 16 has been canceled, thereby mooted the rejection.

In the Office Action, claims 1, 4, 6, 10, 14, 15, and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. (U.S. Patent No. 5,489,888) in view of Jostlein (U.S. Patent No. 5,315,259). Applicant respectfully traverses this rejection.

Claim 1 recites a detection assembly for capacitively detecting an object on a support structure. As recited by claim 1, the assembly includes, *inter alia*, at least one electrode being arranged adjacent said support structure, and a controller structured to control a first AC source to provide a predetermined first AC voltage with a first amplitude and a first phase via a first conductor to the at least one electrode for capacitively detecting the object on the support structure. The combination of Jagiella et al. and Jostlein does not disclose, teach, or suggest all of the features of claim 1.

Jagiella et al. discloses a sensor system for contactless measuring of the distance between a sensor body and an object. *See* Jagiella et al. at Abstract. Jagiella et al. does not disclose that the sensor system is even capable to detect whether an object is on a support structure, because the sensor will sense the distance between the sensor body and the top surface of the object or the support structure. In contrast, claim 1 specifically recites a detection assembly for capacitively detecting an object on a support structure.

Jostlein discloses a non-contact, omni directional capacitive probe for use in dimensional gauging. *See* Jostlein at Abstract. The capacitance of the capacitor of Jostlein is indicative of the distance between the sensing tip and the workpiece. *See* Jostlein at Abstract. Jostlein does not disclose that the probe may be used to detect whether an object is on a support structure.

In view of the foregoing, Applicant respectfully submits that even if Jagiella et al. and Jostlein were combinable, which Applicant in no way concedes would be proper, all of the features of claim 1 are not disclosed, taught, or suggested by Jagiella et al. in view of Jostlein. Accordingly, Applicant respectfully submits that claim 1 and the claims that depend from claim 1, and include additional advantageous features, are patentable over Jagiella et al. in view of Jostlein, and respectfully request that the rejection of claims 1, 4, and 6 be withdrawn.

Claim 10 recites a method for capacitively detecting an object on a support structure that includes “controlling a DC source to provide a predetermined DC voltage to at least one

electrode to provide a clamping force on an object; controlling an AC source to provide a predetermined first AC voltage with a first amplitude and a first phase via a first conductor to the at least one electrode for capacitively detecting the object; and controlling a second AC source to provide a predetermined second AC voltage to a second conductor, the second AC voltage having a second amplitude and a second phase, which are substantially equal to the first amplitude and first phase, respectively.” The combination of Jagiella et al. and Jostlein does not disclose, teach, or suggest each and every feature of claim 10.

As discussed above, both Jagiella et al. and Jostlein teach sensors/probes that are used to detect distances between objects – not whether an object is on a support structure. As such, these references do not disclose, teach, or suggest a method for capacitively detecting an object on a support structure having all of the features of claim 10. Moreover, neither of these references teaches controlling a DC source to provide a predetermined DC voltage to at least one electrode to provide a clamping force on an object. It is the Examiner’s position that Jagiella et al. inherently teaches this feature. As clearly provided by MPEP §2112: “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art,” *citing Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). Jagiella et al. clearly does not teach that the contactless device that is used to measure a distance between a sensor body and an object is also used to provide a clamping force to the object. The Office Action points to “electrode 3” as providing a clamping force. It is not clear where Jagiella et al. discloses “electrode 3.” Reference number “3” is used for the workpiece. *See Jagiella et al.* at col. 4, ln. 66 – col. 5, ln. 3.

In view of the foregoing, Applicant respectfully submits that claim 10 is patentable over Jagiella et al. in view of Jostlein, and respectfully requests that the rejection of claim 10 be withdrawn.

Claim 14 has been canceled, thereby mooted the rejection of claim 14.

Claim 15 recites a computer-readable medium encoded with a program. As recited by claim 15, the program includes “controlling a DC source to provide a predetermined DC voltage to at least one electrode to provide a clamping force on an object; controlling an AC source to provide a predetermined first AC voltage with a first amplitude and a first phase via a first conductor to the at least one electrode for capacitively detecting the object; and controlling a second AC source to provide a predetermined second AC voltage to a second

conductor, the second AC voltage having a second amplitude and a second phase, which are substantially equal to the first amplitude and first phase, respectively.” The combination of Jagiella et al. and Jostlein does not disclose, teach, or suggest – at least – controlling a DC source to provide a predetermined DC voltage to at least one electrode to provide a clamping force on an object.

In view of the foregoing, Applicant respectfully requests that the rejection of claim 15 be withdrawn.

Claim 17 recites a method for capacitively detecting an object on a support structure that includes “providing a predetermined DC voltage to at least one electrode to provide a clamping force on an object; providing a predetermined first AC voltage with a first amplitude and a first phase via a first conductor to the at least one electrode for capacitively detecting the object; and providing a predetermined second AC voltage to a second conductor, the second AC voltage having a second amplitude and a second phase, which are substantially equal to the first amplitude and first phase, respectively.” As discussed above, the combination of Jagiella et al. and Jostlein does not disclose, teach, or suggest a method for capacitively detecting an object on a support structure or providing a predetermined DC voltage to at least one electrode to provide a clamping force on an object.

Accordingly, Applicant respectfully submits that claim 17 is patentable over Jagiella et al. and Jostlein, and respectfully requests that the rejection of claim 17 be withdrawn.

In the Office Action, claims 2 and 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. and Jostlein, and further in view of Saeki et al. (U.S. Patent No. 5,557,215). Applicant respectfully traverses this rejection.

Claims 2 and 3 depend from claim 1. As discussed above, claim 1 is patentable over Jagiella et al. and Jostlein. Saeki et al. does not make up for the deficiencies of Jagiella et al. and Jostlein. Saeki et al. teaches an electrostatic chucking apparatus that has means for measuring the self-bias voltage of an object being subjected to a plasma process. *See* Saeki et al. at Abstract. Saeki et al. does not disclose, teach, or suggest a detection assembly for capacitively detecting an object on a support structure. As such, the combination of Jagiella et al., Jostlein, and Saeki et al. – which Applicant in no way concedes would even be a proper combination – does not disclose, teach, or suggest all of the features of claim 1, 2, or 3.

Accordingly, Applicant respectfully requests that the rejection of claims 2 and 3 be withdrawn.

In the Office Action, claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. and Jostlein, and further in view of Wakamasu et al. (U.S. Patent No. 5,321,363). Claim 5 has been canceled, thereby mooted the rejection.

In the Office Action, claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. in view of Jostlein and Neukermans et al. (U.S. Patent No. 4,654,581). Applicant respectfully traverses this rejection.

Claim 7 recites a lithographic apparatus that includes, *inter alia*, “an illumination system constructed to provide a beam of radiation; and a detection assembly for capacitively detecting an object on a support structure, said detection assembly including: at least one electrode being arranged adjacent said support structure; at least one cable having a first conductor and a second conductor, said first conductor having a first end connected to said at least one electrode; a first AC source connected to a second end of the first conductor; a controller structured to control said first AC source to provide a predetermined first AC voltage with a first amplitude and a first phase via said first conductor to said at least one electrode for capacitively detecting said object on said support structure.” The combination of Jagiella et al., Jostlein, and Neukermans et al. – even if proper, which Applicant in no way admits - does not disclose, teach, or suggest all of the features of claim 7.

As an initial matter, neither Jagiella et al. nor Jostlein disclose or suggest a lithographic apparatus. As such, it is unclear how Jagiella et al. can be modified to include an illumination system as suggested in the Office Action. *See* page 9, last paragraph. Moreover, as discussed above, the combination of Jagiella et al. and Jostlein does not disclose or remotely suggest a detection assembly for capacitively detecting an object on a support structure. Neukermans et al. does not make up for the deficiencies of Jagiella et al. and Jostlein. Neukermans et al. teaches an aligner for aligning a mask and a wafer during photolithography that uses detection of the differential capacitance between two sets of conductive fingers on the mask and ridges on the wafer. *See* Neukermans et al. at Abstract. Applicant respectfully submits that none of Jagiella et al., Jostlein, Neukermans et al., or the combination thereof discloses, teaches, or suggests a lithographic apparatus that includes all of the features recited by claim 7.

In view of the foregoing, Applicant respectfully requests that the rejection of claim 7 be withdrawn.

In the Office Action, claims 8 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. and Jostlein, and further in view of Burkhart et al. Applicant respectfully traverses this rejection.

Claims 8 and 9 depend from claim 7 and each add “an actuator constructed to move said support structure,” as well as other advantageous features. As discussed above, claim 7 is patentable over Jagiella et al. and Jostlein (and Neukermans et al.). As an initial matter, none of Jagiella et al., Jostlein, and Burkhart et al. disclose a lithographic apparatus that includes an illumination system, as recited by claim 7. Moreover, none of Jagiella et al., Jostlein, and Burkhart et al. disclose an actuator constructed to move the support structure, as recited by claims 8 and 9. The Office Action gives no indication where such actuators are taught by Jagiella et al., Jostlein, or Burkhart et al. *See* Office Action at page 10, item 13.

In view of the foregoing, Applicant respectfully submits that claims 8 and 9 are patentable over Jagiella et al. in view of Jostlein in view of Burkhart et al., and respectfully requests that the rejection of claims 8 and 9 be withdrawn.

In the Office Action, claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. and Jostlein, and further in view of Barnes et al. (U.S. Patent No. 5,670,066). Applicant respectfully traverses this rejection.

Claim 11 depends from claim 10. As discussed above, claim 10 is patentable over Jagiella et al. in view of Jostlein. Barnes et al. discloses an electrostatic chuck in a vacuum plasma processing chamber. *See* Barnes et al. at Abstract. Whether or not a workpiece is properly positioned on the electrostatic chuck is determined by measuring the capacitance across a pair of electrodes of the chuck. *See* Barnes et al. at Abstract. The capacitance across the pair of electrodes is made without the workpiece being positioned on the chuck, and then with the workpiece on the chuck. *See* Barnes et al. at col. 4, lns. 32-36. If the difference between the two measured values is in a predetermined ranges, the workpiece is assumed to be properly positioned and ready for clamping. *See* Barnes et al. at col. 4, lns. 36-43. Applicant respectfully submits that one of ordinary skill in the art would not modify the workpiece detector of Barnes et al. with a contactless distance measuring device of Jagiella et al. or Jostlein, as such a distance measuring device would not provide the information needed to determine whether the workpiece is properly positioned on the chuck of Barnes et al.

In view of the foregoing, Applicant respectfully submits that claim 11 is patentable over Jagiella et al. in view of Jostlein and further in view of Barnes et al., and respectfully requests that the rejection of claim 11 be withdrawn.

In the Office Action, claims 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Jagiella et al. and Jostlein, and further in view of Barnes et al. and Burkhart et al. Applicant respectfully traverses this rejection.

Claims 12 and 13 depend from claim 10. None of Jagiella et al., Jostlein, Barnes et al. or Burkhart et al. disclose, teach, or suggest moving the support structure, as recited by each of claims 12 and 13. As such, the combination of these references – which Applicant in no way concedes would even be proper – does not disclose, teach, or suggest each and every feature of claims 12 and 13.

In view of the foregoing, Applicant respectfully submits that claims 12 and 13 are patentable over Jagiella et al. and Jostlein, and further in view of Barnes et al. and Burkhart et al., and respectfully requests that the rejection of claims 12 and 13 be withdrawn.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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